

IN THE SPECIFICATION

Substitute the following amended paragraph for the paragraph on pg. 12, line 15 to pg. 13, line 6 of the Application:

A (FIG. 3 illustrates an example program 80 including language statements to declare extended attributes for address constants and external symbols in accordance with preferred embodiments. The object module 82 includes an External Symbol Directory (ESD) 84, and a Relocation List Directory (RLD) 86. The program 80 includes a language statement 90 using the XATTR command to declare extended attributes named by label AttrA for the symbol definition A. The attributes named by label AttrA are defined at the language statement 92 in the program 82 80. The program 80 further includes two references or calls 102, 104 to external symbol B. The address constants 94, 96 are used to separately relocate references to the external symbol B. Extended attribute information is declared for each of the two address constants in the language statements 94, 96. The extended attribute information for the address constants 94, 96 is declared indirectly using the statements 98, 100 to define the extended attributes B1 and B2. In this way, different attribute information is declared for each call or reference to symbol B in the call statements 102 and 104. Symbol B is called with different parameters in the separate calls. Providing different attribute information with each call tailors the attribute information to the nature of the call. This provides for independent checking that is sensitive to how the symbol is referenced in different contexts. These two different calls 102, 104 using the address constants 94, 96, will be resolved at binding and load time to the same address. The first call 102 uses the address constant 94 and the second call 104 uses address constant 96.

Substitute the following amended paragraph for the paragraph on pg. 13, lines 7-20 of the Application:

A<sup>2</sup> The ESD 84 portion of the object module 82 includes two records 110 and 112 to provide the location in the program 82 80 of the definition of A and the reference to B, respectively. Preferred embodiments include pointers in the ESD records to the location of attribute information in the object code 124 for the symbols described in the ESD 84. There are two

A<sup>2</sup> fields, one for the fixed attribute information or for a pointer to it, for the symbol and the other for a pointer to the extended attribute information for the symbol. The fixed attributes may be encoded directly into a field in the ESD record 84 or they may be encoded in the object code 124. For instance, the extended attribute information pointer for the symbol definition A points to the encoded attribute information 126 derived from the language statement. Similarly, the extended attributes B1 128 and B2 130 encoded in the object code 124 are derived from the language statements for B1 98 and B2 100 in the source module 80. The extended attributes 126 in the object code 124 also include the coding of the extended attributes derived from language statements 92 in the source module.

---

Substitute the following amended paragraph for the paragraph on pg. 13, line 21 to pg. 14, line 3 of the Application:

---

A<sup>3</sup> FIG. 4 provides a preferred embodiment of a record 200 for each symbol entry in the ESD 84, providing information on the location of the symbol and fixed and extended attribute information in the program 82 80. The ESD record 200 includes an ESD symbol type indicator 202 describing the type of symbol, an ESDID 204 which is the identification number for the symbol in the program 82 80 and (for symbols defined in the program) an offset 206 providing the offset of the symbol in the program 82 80. The Fixed Attribute 208 and Extended Attribute ESDID 212 identify the fixed and extended attribute information, respectively, in the program 82 80. The extended attribute offset 214 provides the offset within the program identified by the ESDID where the attribute information is located. The binder program 24 can use the ESDID numbers 204 and 212 to locate a symbol and associated extended attribute data within the object module 82.

---

Substitute the following amended paragraph for the paragraph on pg. 14, lines 4-13 of the Application:

---

A<sup>4</sup> With reference to FIG. 3, the RLD 86 includes entries 120, 122 for address constants located in the program 82 80. These entries indicate the location in the program 82 80 of the

A<sup>4</sup>  
address constants 94, 96 which are used to relocate references to external symbol B into the program ~~82~~ 80. Preferred embodiments further provide extended attribute pointer information 120, 122 to point to the declaration 98, 100 of attribute information for the address constants 94, 96 in the program 80 at 98 and 100, and encoded in the object module 82 at 128 and 130, where extended attribute information is associated with each address constant to provide call specific attribute information. Fixed attribute information pointers may also be provided if fixed attribute information is provided with an address constant.

---

Substitute the following amended paragraph for the paragraph on pg. 14, lines 14-22 of the Application:

---

A<sup>5</sup>  
FIG. 5 illustrates a record 220 in the RLD 86 to provide information on an address constant in the program ~~82~~ 80. The record 220 includes a first field 222 indicating the ESDID of the referenced symbol, or R-pointer; a second field 224 indicating the reference type of the referenced symbol; a third field 225 indicating the ESDID of the control section containing the address constant in program ~~82~~ 80, referred to as a P-pointer; a fourth field 226 indicating a location of the address constant in the section of the program designated by the P-pointer and its length; a fifth field 228 indicating fixed attribute information declared for the address constant; and a sixth field 230 providing the ESDID and offset of the extended attribute data for the address constant.

---